I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted by facsimile to the U.S. Patent and Trademark Office, Attn: MS Amendment, facsimile no. (571) 273-8300, on the date shown below.

Dated: March 27, 2007 Signature: (Diane Blevins)

Docket No.: 532212000602
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Thomas L. CANTOR

Application No.: 10/641,780 Confirmation No.: 3069

Filed: August 15, 2003 Art Unit: 1641

For: METHODS FOR DIFFERENTIATING AND MONITORING PARATHYROID AND BONE STATUS RELATED DISEASES Examiner: C. Cheu

SUPPLEMENTAL AMENDMENT

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

Further to the Amendment filed on January 5, 2007, and the teleconferences between the Examiner and the undersigned on March 19, 20 and 27, applicant submits the present Supplemental Amendment to place the present application into condition of allowance.

Enclosed herewith is a replacement sheet for Figure 5. Also enclosed herewith is a copy of a Declaration of Thomas L. Cantor pursuant to 37 C.F.R. § 1.132 submitted on March 6, 2006 in connection with a co-pending U.S. patent application Serial No. 10/617,489 (Cantor Declaration) (Exhibit A).

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Amendments to the Drawings begin on page 7 of this paper.

Remarks/Arguments begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

1-46. (canceled)

47. (currently amended): A method for producing an antibody for specifically detecting whole PTH_{1-84} while avoiding detecting ~~PTH_{7-84}~~ an interfering non-(1-84) parathyroid hormone fragment in a biological sample, which method comprises:

a) administering a first peptide or protein immunogen to a host animal to induce antibody production against said first peptide or protein immunogen in said host animal, said first peptide or protein immunogen being human, rat, bovine, or porcine PTH_{1-84};

b) monitoring antibody titer produced by said administration of said first peptide or protein immunogen to said host animal;

c) extracting antiserum produced in said host animal by said administration of said first peptide or protein immunogen; and

d) purifying said antiserum and selecting at least one antibody from said antiserum extracted in step c) by affinity chromatography utilizing a second peptide or protein immunogen, which comprises a contiguous portion of human, rat, bovine, or porcine ~~PTH having an amino acid sequence set forth in SEQ ID NO:1 (PTH_{1-84})~~ and has the following characteristics:

i) the N-terminal amino acid residue of said second peptide or protein immunogen starts at position 1 of said PTH_{1-84}; and

ii) the C-terminal amino acid residue of said second peptide or protein immunogen ends at any position spanning position 8 through position ~~34~~ 33 of said PTH_{1-84}.

48. (cancelled)

49. (previously presented): The antibody produced by the method of claim 47.

50. (currently amended): The method of claim 47 wherein in step a), said host animal is selected from the group consisting of ~~mice~~ a mouse and ~~rabbits~~ a rabbit.

51. (previously presented): The method of claim 47 wherein in step a), said host animal comprises at least one goat.

52. (cancelled)

53. (currently amended): The antibody of claim 49 wherein said antibody further includes a label attached thereto, said label being selected from the group consisting of a radioisotopes, a fluorescent agents, an enzymes and a colorimetric agents.

54. (withdrawn): An assay useful for the determination of whole PTH_{1-84} while avoiding detection of PTH_{7-84} utilizing the antibody produced by the methods of claim 47.

55-58. (cancelled)

59. (previously presented): The method of claim 47, wherein in step d), the second peptide or protein immunogen is human PTH_{1-8}, rat PTH_{1-8}, or a peptide having at least four amino acids in the common sequence of human and rat PTH_{1-8}.

60. (new): The method of claim 47, wherein the interfering non-(1-84) parathyroid hormone fragment is PTH_{7-84}.

61. (new): The method of claim 47, wherein the first peptide or protein immunogen is human PTH_{1-84}.

62. (new): The method of claim 47, wherein the first peptide or protein immunogen is rat PTH_{1-84}.

63. (new): The method of claim 47, wherein the first peptide or protein immunogen is bovine PTH_{1-84}.

64. (new): The method of claim 47, wherein the first peptide or protein immunogen is porcine PTH_{1-84}.

65. (new): The method of claim 47, wherein the second peptide or protein immunogen comprises a contiguous portion of human PTH_{1-84} and has the following characteristics:

i) the N-terminal amino acid residue of the second peptide or protein immunogen starts at position 1 of human PTH_{1-84}; and

ii) the C-terminal amino acid residue of the second peptide or protein immunogen ends at any position spanning position 8 through position 33 of human PTH_{1-84}.

66. (new): The method of claim 47, wherein the second peptide or protein immunogen comprises a contiguous portion of rat PTH_{1-84} and has the following characteristics:

i) the N-terminal amino acid residue of the second peptide or protein immunogen starts at position 1 of rat PTH_{1-84}; and

ii) the C-terminal amino acid residue of the second peptide or protein immunogen ends at any position spanning position 8 through position 33 of rat PTH_{1-84}.

67. (new): The method of claim 47, wherein the second peptide or protein immunogen comprises a contiguous portion of bovine PTH_{1-84} and has the following characteristics:

i) the N-terminal amino acid residue of the second peptide or protein immunogen starts at position 1 of bovine PTH_{1-84}; and

ii) the C-terminal amino acid residue of the second peptide or protein immunogen ends at any position spanning position 8 through position 33 of bovine PTH_{1-84}.

68. (new): The method of claim 47, wherein the second peptide or protein immunogen comprises a contiguous portion of porcine PTH_{1-84} and has the following characteristics:

i) the N-terminal amino acid residue of the second peptide or protein immunogen starts at position 1 of porcine PTH_{1-84}; and

ii) the C-terminal amino acid residue of the second peptide or protein immunogen ends at any position spanning position 8 through position 33 of porcine PTH_{1-84}.

AMENDMENTS TO THE DRAWINGS

The attached drawing sheet includes changes to Figure 5. Please note, the actual figure remains the same, however, that portion of the title referring to Antibody As Tracer, should read: (with PTH 1-[[8]]9 Antibody as Tracer).

Please replace Figure 5 with the presently submitted amended Figure 5.

Attachment: Replacement sheet

REMARKS

Figure 5 is amended to reflect the inventor's belief that PTH 1-9 antibody was used as a tracer antibody in the test results depicted in Figure 5. (*See* Exhibit A, Cantor Declaration) The use of a PTH 1-9 antibody in a PTH assay is supported throughout the present application as originally filed. For example, Figure 2 of the parent Application No. 09/231,422 (the '422 Application) and the present application illustrates a tracer antibody that binds to an epitope within PTH (1-9) sequence.

Claims 1-59 were previously submitted for examination. Claim 54 has been withdrawn from consideration, and claims 1-46 were previously canceled. Claims 48, 52 and 55-58 have been canceled, claims 47, 50 and 53 have been amended and new claims 60-68 have been added by the present Supplemental Amendment. Therefore claims 47, 49-51, 53, 54 and 59-68 are currently pending and under active consideration.

Support for the amended claim 47 for reciting "avoiding detecting an interfering non-(1-84) parathyroid hormone fragment" can be found throughout the '422 Application, and *inter alia*, at page 3, lines 28-29, which states "[t]he present invention relates to a method for detecting wPTH in a biological sample without detecting the non (1-84) large PTH fragment component of I-PTH." (*See* also page 5, lines 11-14 and line 24 of the present application, which defines "a large, non-whole PTH peptide fragment" as "PIN," and states that "[i]n making a measurement of wPTH, one does not want to detect PIN.")

Support for the amended claim 47 for reciting "said first peptide or protein immunogen being human, rat, bovine, or porcine PTH_{1-84}," "a second peptide or protein immunogen, which comprises a contiguous portion of human, rat, bovine, or porcine PTH_{1-84}," and for new claims 61-68, can be found throughout the present application, and *inter alia*, at page 9, lines 4-11.

Support for the amended claim 47 for reciting "the C-terminal amino acid residue of said second peptide or protein immunogen ends at any position spanning position 8 through position 33 of said PTH_{1-84}" can be found throughout the present application, and *inter alia*, in the incorporation

by reference of Gao et al., Clinica Chimica Acta 245 (1996) 39-59 (the Gao article) in the '422 Application and the present application. The Gao article teaches numerous human PTH peptides, including $hPTH_{1-33}$ (*See* the Gao article at page 54).

Support for the new claim 60 for reciting "the interfering non-(1-84) parathyroid hormone fragment is PTH_{7-84}" can be found throughout the '422 Application, and *inter alia*, in Figures 5 and 6. (*See* also Figures 5, 6 and 11 of the present application.)

According, the present amendments to the drawings and claims do not add any new matter. Entry of the amendments is respectfully requested.

With respect to all amendments and canceled claims, Applicant has not dedicated or abandoned any unclaimed subject matter and moreover have not acquiesced to any rejections and/or objections made by the Patent Office. Applicant reserves the right to pursue prosecution of any presently excluded claim embodiments in future continuation and/or divisional applications.

Applicant's Statements of the Substances of the Interviews

On March 19, 20 and 27, Examiner Jacob Cheu and the undersigned had telephonic interviews to discuss the outstanding issues and the status of the present application. Examiner Cheu indicated that claims 47-53 and 59 as submitted in the January 5, 2005 Amendment may be considered allowable, and claims 55-58 as submitted in the January 5, 2005 Amendment may be considered having interfering subject matter with the issued claims of U.S. patent No. 6,838,264 B2 ('264 patent) . Examiner Cheu requested that applicant file a supplemental Amendment to: 1) to place the present application into condition of allowance by canceling claims 55-58; or 2) to propose one or more counts to provoke interference with the '264 patent.

Conclusion

By this Supplemental Amendment, applicant has canceled claims 55-58, which may contain interfering subject matter with the issued claims of the '264 patent. In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket No. 532212000602. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: March 27, 2007

Respectfully submitted,

By _____

Peng Chen
Registration No.: 43,543
MORRISON & FOERSTER LLP
12531 High Bluff Drive, Suite 100
San Diego, California 92130-2040
(858) 720-5117

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: 3/6/06 Signature: _____ (Diane Blevins)

Docket No.: 532212000623
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Thomas L. CANTOR

Application No.: 10/617,489 Confirmation No.: 4476

Filed: July 10, 2003 Art Unit: 1641

For: METHODS, KITS AND ANTIBODIES FOR DETECTING PARATHYROID HORMONE Examiner: J. Cheu

DECLARATION OF THOMAS L. CANTOR PURSUANT TO 37 C.F.R § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Thomas L. Cantor, in my individual capacity, hereby declare as follows:

1. I am the inventor of the above-referenced patent application, and am familiar with the contents thereof.

2. This application is a continuation-in-part (CIP) of serial number 09/344,639, filed on June 26, 1999, and now issued as U.S. Patent No. 6,743,590, which is a CIP of serial number 09/231,422 (the '422 application), filed on January 14, 1999, now issued as U.S. Patent No. 6,689,566 (the '566 patent).

3. Figure 5 of the '422 application mentions a tracer antibody that is referred to as "PTH 1-8 Antibody as Tracer." The term "PTH 1-8 antibody" was used to refer to this antibody

because I then believed the antibody had been isolated by Dr. Ping Gao and his co-workers using a PTH 1-8 peptide for affinity purification of the antibody. When Figure 5 was created and when the '422 application was filed, I believed that such a tracer antibody was used for the experiment represented by Figure 5.

4. In a deposition which occurred on August 27, 2003, related to the case Nichols v. Scantibodies on Nichols's U.S. patent No. 6,030,790, the attorney questioning me said, "Well, isn't it true that 1-9 meant that you used a 1-9 peptide to affinity purify your antibody?" In response, I stated: "I believe Dr. Gao used a peptide that contained 1-9."

5. In connection with the case Scantibodies v. Immutopics on Scantibodies' 566 patent, I became aware that the peptide in question was purchased from a supplier, as was the normal practice at Scantibodies: such peptides are typically purchased, rather than made. I also saw the invoice for the particular peptide used for affinity purification of the antibody that was used to generate the data represented by Figure 5 of the patent application serial number 09/231,422, which was filed on January 14, 1999. The invoice states that the peptide purchased for that purpose was a peptide containing PTH 1-9.

6. Based on the above facts, I believe that the antibody used to generate the results described in Figure 5 of serial number 09/231,422 should have been referred to as a PTH 1-9 antibody. In the current application, Figure 5, which was retained from the earlier '422 application, still refers to the antibody as "PTH 1-8 Antibody." Accordingly, I believe Figure 5 of the current application should be corrected to refer to the antibody as "PTH 1-9 Antibody."

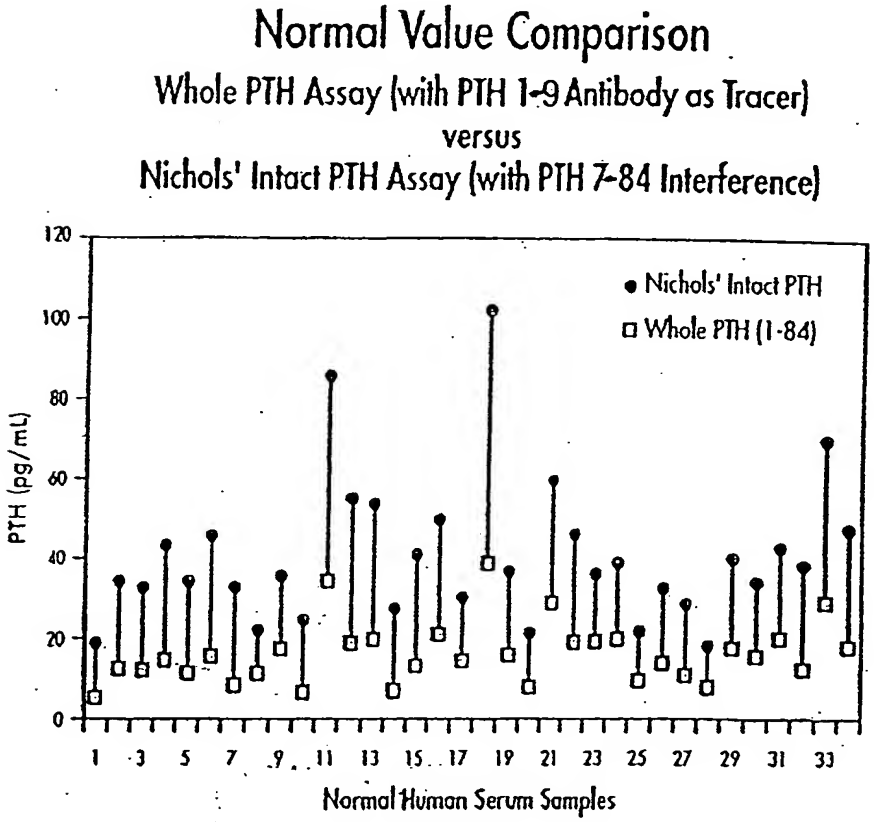
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

March 6, 2006
Date

Thomas L. Cantor

FIG. 5


Normal Value Comparison
Whole PTH Assay (with PTH 1-9 Antibody as Tracer)
versus
Nichols' Intact PTH Assay (with PTH 7-84 Interference)
Nichols' Intact PTH
Whole PTH (1-84)
PTH (pg/mL)
0
20
40
60
80
100
120
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
Normal Human Serum Samples